

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

1.(Currently Amended) A tube holder for use with a peristaltic pump, the tube holder including comprising:

a housing having a recess for receipt of a pump rotor, a tube race for receipt of a tube around the recess and having a first race part around one part of the recess and a second race part around another part of the recess, a first tube inlet into the first race part and a first tube outlet from the first race part, a second tube inlet into the second race part and a second tube outlet from the second race part;

the tube being insertable in the tube race by movement in a substantially orthogonal direction relative to the tube race so that it extends in through the first tube inlet, around the first race part, out through the first tube outlet, in through the second tube inlet, around the second race part, and out through the second tube outlet.

2.(Original) A tube holder as claimed in claim 1, wherein the first tube outlet and second tube inlet are configured such that the tube can exit the housing between the first outlet and second inlet.

3.(Original) A tube holder as claimed in claim 1, wherein the first tube outlet and second tube inlet are in communication with a recess or groove which is separate to the tube race, but which is located within the housing.

4.(Currently Amended) A tube holder as claimed in any one of claims 1 to 3 claim 1, wherein the housing includes comprises a lip or projection between the first outlet and the second inlet, behind which the tube can be located to maintain the tube in position within the tube race.

5.(Currently Amended) A tube holder as claimed in any one of claims 1 to 4 claim 1, wherein the recess is tapered for receipt of a tapered pump rotor.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

6.(Original) A tube holder as claimed in claim 5, wherein each tube race part is defined by a channel or groove extending inwardly from a respective tube inlet and tube outlet.

7.(Original) A tube holder as claimed in claim 6, wherein the grooves extend part way around the recess.

8.(Original) A tube holder as claimed in claim 7, wherein the recess provides surfaces against which the tube is occluded to pump fluid therethrough in use.

9.(Currently Amended) A tube holder as claimed in ~~any one of the preceding claims~~ claim 1, wherein the tube holder is a one-piece article.

10.(Currently Amended) The combination of a tube holder as claimed in ~~any one of the preceding claims~~ claim 1 and a pump head having a tapered rotor which is received in the recess of the tube holder, such that actuation of the pump head causes fluid to be pumped through a tube in the tube holder by occlusion of the tube.

11.(Original) The combination as claimed in claim 10, wherein the tube is resiliently flexible so that it returns substantially to its original shape following occlusion, to thereby suck fluid through the tube.

12.(Currently Amended) The combination as claimed in claim 10 ~~or 11~~, wherein the rotor is axially biased towards its tapered end, such that the pump rotor and tube race are self-adjusting, to maintain a desired pressure on a tube in the tube race during pumping.

13.(Original) The combination as claimed in claim 12, wherein the rotor is axially biased by a compression spring.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

14.(Currently Amended) The combination as claimed in claim 12 or 13, including a stop to limit the axial movement of the rotor relative to the housing.

15.(Original) The combination as claimed in claim 14, wherein the stop is in the form of an annular lip on the rotor.

16.(Currently Amended) The combination as claimed in ~~any one of claims 13 to 15~~ claim 13, wherein the pump head includes comprises a transmission mechanism to transmit motive power from a power source to the rotor, and wherein the base of the tapered rotor includes comprises a plurality of gear teeth which engage with a gear of the transmission mechanism, and wherein the gear teeth of the rotor and the teeth of the gear of the transmission mechanism are of sufficient length to remain engaged during axial movement of the rotor.

17.(Original) The combination as claimed in claim 16, wherein the gear teeth of the rotor are elongate and longer than the teeth of the gear.

18.(Currently Amended) The combination as claimed in ~~any one of claims 10 to 17~~ claim 10, wherein part of the rotor is substantially conical or frustoconical, and has a plurality of rollers rotatably mounted thereon which are configured to occlude the tube in use.

19.(Original) The combination as claimed in claim 18, wherein the rollers are substantially frustoconical in configuration, with their tapered ends directed towards the tapered end of the rotor.

20.(Original) The combination as claimed in claim 19, wherein the rollers are mounted for rotation with axes which taper toward the tapered end of the rotor.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

21.(Currently Amended) The combination as claimed in ~~any one of claims 18 to 20~~
~~claim 18~~, wherein the rotor includes comprises a main body part and a head part, with the
rollers mounted for rotation in a recess or recesses between the main body part and the
head part.

22.(Currently Amended) The combination as claimed in ~~any one of claims 10 to 21~~
~~claim 10~~, wherein the tube holder and pump head are fully separable from an operable
configuration in which the rotor is located in the recess of the tube holder and configured
to pump fluid through a tube to a loading configuration in which the tube may be loaded
into the tube race.

23.(Currently Amended) A method of loading a tube into a tube holder including
comprising:

providing a tube holder having a housing having a recess for receipt of a pump rotor, a
tube race for receipt of a tube around the recess and having a first race part around one
part of the recess and a second race part around another part of the recess, a first tube
inlet into the first race part and a first tube outlet from the first race part, a second tube
inlet into the second race part and a second tube outlet from the second race part;
providing a tube; and

moving the tube in a substantially orthogonal direction relative to the tube race such that
it extends in through the first tube inlet, around the first race part, out through the first
tube outlet, in through the second tube inlet, around the second race part, and out through
the second tube outlet.

24.(Currently Amended) A method as claimed in claim 23, wherein the tube holder
is as claimed in ~~any one of claims 2 to 9~~ claim 2.

25.(Currently Amended) A method as claimed in claim 24, wherein the tube holder
includes comprises a retainer which is in the form of a projection or lip between the first

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

outlet and the second inlet, and wherein the method further includes comprises pulling the installed tube in a direction away from the projection or lip so that the tube is maintained in position within the tube race with part of the tube located behind the projection or lip.

26.(Currently Amended) A method as claimed in ~~any one of claims 23 to 25~~ claim 23, wherein the method includes comprises bringing the tube holder into engagement with a pump head to provide the combination of a tube holder and a pump head, and so that the rotor is located in the recess in the tube holder.

27.(Currently Amended) A method as claimed in claim 26, wherein the combination is as claimed in ~~any one of claims 10 to 22~~ claim 10.

28. The combination of a peristaltic pump head having a tapered pump rotor which is rotatable about an axis of rotation, and a tube holder having a recess for receipt of the tapered end of the rotor, the tube holder having a tube race configured for receipt of a tube for pumping of a fluid by movement of the rotor, the tube race including comprising a plurality of separate race parts around the recess defined by a plurality of apertures or recesses such that the tube can exit and re-enter the tube race

29.(Original) The combination as claimed in claim 28, wherein the tube is insertable into the tube race without separating the tube holder from the pump head.

30.(Original) The combination as claimed in claim 28, wherein the tube holder and pump head are movable from an operable configuration in which the rotor is located in the recess of the tube holder and configured to pump fluid through a tube to a loading configuration in which the tube may be loaded into the tube race.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

31.(Original) The combination as claimed in claim 30, wherein the tube holder and pump head are fully separable.

32.(Currently Amended) The combination as claimed in ~~any one of claims 28 to 31~~
~~claim 28~~, wherein the tube holder has a housing, a first tube race part around one part of the recess defined by a first tube inlet aperture and a first tube outlet aperture, and a second tube race part around another part of the recess defined by a second tube inlet aperture and a second tube outlet aperture, such that movement of a tube threaded therethrough in the axial direction of the rotor is minimised or prevented by the apertures.

33.(Currently Amended) The combination as claimed in claim 30 ~~or 31~~ is as claimed in ~~any one of claims 1 to 9~~, wherein the tube holder comprises:
a housing having a recess for receipt of a pump rotor, a tube race for receipt of a tube around the recess and having a first race part around one part of the recess and a second race part around another part of the recess, a first tube inlet into the first race part and a first tube outlet from the first race part, a second tube inlet into the second race part and a second tube outlet from the second race part;
the tube being insertable in the tube race by movement in a substantially orthogonal direction relative to the tube race so that it extends in through the first tube inlet, around the first race part, out through the first tube outlet, in through the second tube inlet, around the second race part, and out through the second tube outlet.

34.(Original) The combination as claimed in claim 33, wherein the tube is resiliently flexible so that it returns substantially to its original shape following occlusion, to thereby suck fluid through the tube.

35.(Currently Amended) The combination as claimed in claim 33 ~~or 34~~, wherein the rotor is axially biased towards its tapered end, such that the pump rotor and tube race are self-adjusting, to maintain a desired pressure on a tube in the tube race during pumping.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

36.(Original) The combination as claimed in claim 35, wherein the rotor is axially biased by a compression spring.

37.(Currently Amended) The combination as claimed in claim 35, ~~or 36, including~~ comprising a stop to limit the axial movement of the rotor relative to the housing.

38.(Original) The combination as claimed in claim 37, wherein the stop is in the form of an annular lip on the rotor.

39.(Currently Amended) The combination as claimed in any ~~one of claims 36 to 38~~ ~~claim 36,~~ wherein the pump head ~~includes~~ comprises a transmission mechanism to transmit motive power from a power source to the rotor, and wherein the base of the tapered rotor ~~includes~~ comprises a plurality of gear teeth which engage with a gear of the transmission mechanism, and wherein the gear teeth of the rotor and the teeth of the gear of the transmission mechanism are of sufficient length to remain engaged during axial movement of the rotor.

40.(Original) The combination as claimed in claim 39, wherein the gear teeth of the rotor are elongate and longer than the teeth of the gear.

41.(Currently Amended) The combination as claimed in any ~~one of claims 28 to 40~~ ~~claim 28,~~ wherein the tapered part of the rotor is substantially conical or frustoconical, and has a plurality of rollers rotatably mounted thereon which are configured to occlude the tube in use.

42.(Original) The combination as claimed in claim 41, wherein the rollers are substantially frustoconical in configuration, with their tapered ends directed towards the tapered end of the rotor.

**In re the Application of DAVID GIBSON et al.
International Application No. PCT/NZ2003/000286
Docket No. 0074-521595**

43.(Original) The combination as claimed in claim 42, wherein the rollers are mounted for rotation with axes which taper toward the tapered end of the rotor.

44.(Currently Amended) The combination as claimed in ~~any one of claims 41 to 43~~ claim 41, wherein the rotor includes comprises a main body part and a head part, with the rollers mounted for rotation in a recess or recesses between the main body part and the head part.

Claims 45-77 (Canceled)